

# PATENT SPECIFICATION

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## (54) PIPE ELBOWS

(71) I, JOHANN FRIEDRICH SCHNEIDER, of Romerstrasse 33, D-638 Bad Homburg, Federal Republic of Germany, a citizen of the Federal Republic of Germany, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pipe elbows or bends in substitution for known pipe bends which particularly in the case of pipe conduits of large diameters are expensive, difficult or impossible to produce.

Known pipe elbows comprise portions which are trapezoidal as viewed in a direction perpendicular to the plane in which the bend lies and adjoin each other in such a way that the shorter sides of the trapezoids are on the inside of the bend.

In order to make such pipe portions, they are cut in a suitable manner from a straight pipe. This results in waste portions being formed from the pipe between adjacent portions of the pipe elbow, and such waste portions have only scrap value.

In accordance with the invention a pipe elbow or bend is formed from a length of straight pipe by a succession of joined adjacent portions wherein the joint planes between the portions lie at right angles to the plane containing the axis of the elbow or bend and meet each other to form a Y, the line of intersection of the joint planes being in a position such that the lengths of the arms and stem of the Y are equal when measured in the said plane containing the axis of the elbow or bend.

Also in accordance with the invention a method of forming a pipe elbow or bend from a length of straight pipe, comprises the steps of transversely severing the pipe at at least one position intermediate its ends by a Y-shaped cut perpendicular to a plane containing the pipe axis and in which the stem of the Y lies perpendicular to the axis of the pipe and the arms of the Y are equal in length to the stem when measured in the plane containing the axis of the elbow or

bend, removing the wedge-shaped portion of the pipe between the Y arms, moving the two parts of the pipe formed by each cut until the cut edges defining the Y arms abut each other, inserting the wedge shaped portion into the gap thus produced between the pipe parts, and finally rejoining the severed pipe by securing together all the abutting cut edges between the pipe parts and the wedge shaped portions.

An embodiment of the invention is illustrated by way of example in diagrammatic form in the accompanying drawing, in which:—

Figure 1 shows a known construction of a pipe elbow.

Figure 2 shows the manner of division in which a straight pipe is cut into pipe portions in the practice of the invention, and,

Figure 3 shows the pipe elbow according to the invention.

The known pipe bend or elbow as shown in Figure 1, comprises trapezoidal portions 1 which are cut out from a straight pipe and then formed into a pipe elbow in such a way that the shorter sides of each trapezoidal portion are nearer the centre point M of curvature of the line of the pipe elbow or bend than the other sides, i.e. they lie on the inside of the bend.

To produce a pipe elbow according to the invention, with, if necessary, variations in the angle of bend, a straight pipe 2 is cut into portions in such a way that the portions 3 are separated from each other by Y-shaped cuts through the pipe and perpendicular to a plane containing the pipe axis in which the lengths of the arms and stem of each Y are equal to each other and the stems are perpendicular to the pipe lengths. When this is done a respective wedge-shaped portion 4 is formed between each two adjacent portions 3.

To form the pipe elbows, the wedge portions 4 are removed and the adjacent portions 3 are tilted in such a way that the separation lines 5 and 6 between a wedge portion 4 and the adjacent portions 3 come into contact with each other.

The wedge portions 4 are fitted from the opposite side into the gap formed by the relative tilting of the portions 3, as is clearly apparent in Figure 3.

5 The edges 5 and 6 of adjacent portions 3 form the inner half 7 of each Y-shaped joint.

After fitting the portions 3 and 4 are secured together by any convenient means appropriate to the material of the pipe and its intended use, and known in the art.

WHAT I CLAIM IS:—

1. A pipe elbow or bend formed from a length of straight pipe by a succession of joined adjacent portions wherein the joint  
15 planes between the portions lie at right angles to the plane containing the axis of the elbow or bend and meet each other to form a Y, the line of intersection of the joint planes being in a position such that the  
20 lengths of the arms and stem of the Y are equal when measured in the said plane containing the axis of the elbow or bend.

2. A method of forming a pipe elbow or bend from a length of straight pipe, comprising the steps of transversely severing the  
25 pipe at at least one position intermediate its ends by a Y-shaped cut perpendicular to a

plane containing the pipe axis and in which the stem of the Y lies perpendicular to the axis of the pipe and the arms of the Y are equal in length to the stem when measured in the plane containing the axis of the elbow or bend, removing the wedge-shaped portion of the pipe between the Y arms, moving the two parts of the pipe formed by  
30 each cut until the cut edges defining the Y arms abut each other, inserting the wedge shaped portion into the gap thus produced between the pipe parts, and finally rejoining the severed pipe by securing together all the  
35 abutting cut edges between the pipe parts and the wedge shaped portions.

3. A method of forming a pipe elbow or bend from a length of straight pipe, substantially as hereinbefore described and  
45 with reference to Figures 2 and 3 of the accompanying drawings.

4. A pipe elbow or bend whenever formed by a method according to claims 2 or 3.

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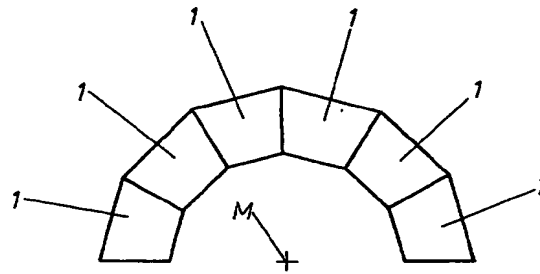


Fig. 1

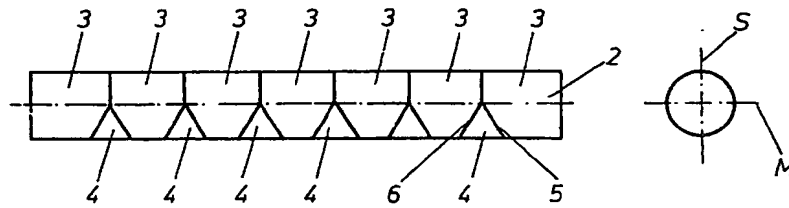


Fig. 2

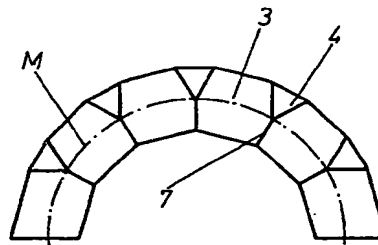


Fig. 3

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